

AFRL OVERVIEW

1 May 2003



Maj Gen Paul D. Nielsen
Commander
Air Force Research Laboratory



***We defend America
by unleashing the power
of innovative science and technology***



Agenda



- 
- **AFRL Today**
 - **AFRL Investment Strategy**
 - **Applied Technology Council**
 - **Technical Program Overview**
 - **Summary**



Air Force Research Laboratory

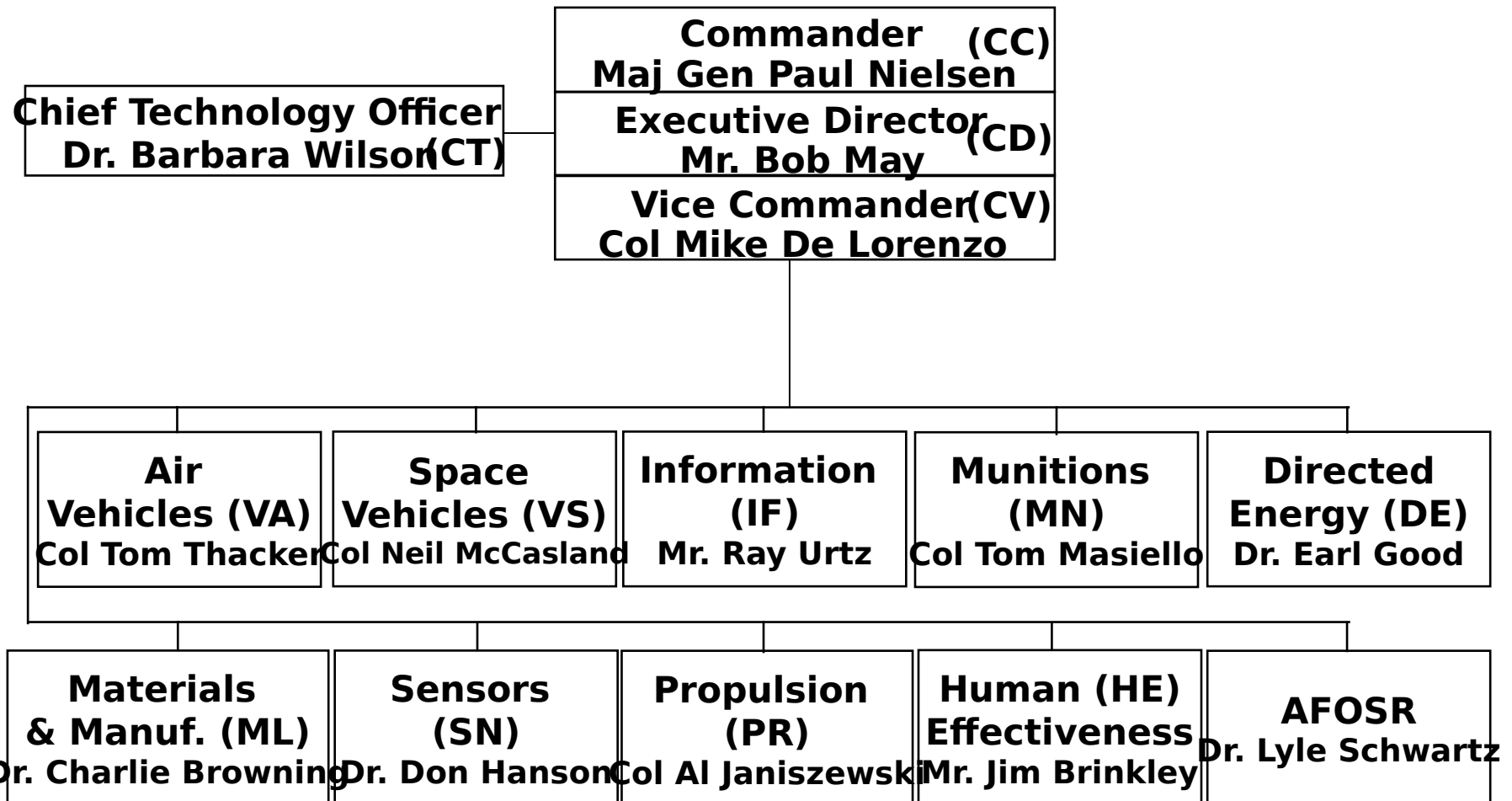


**From
many
labs and
staffs**

**...To the Air Force's
Single Laboratory**

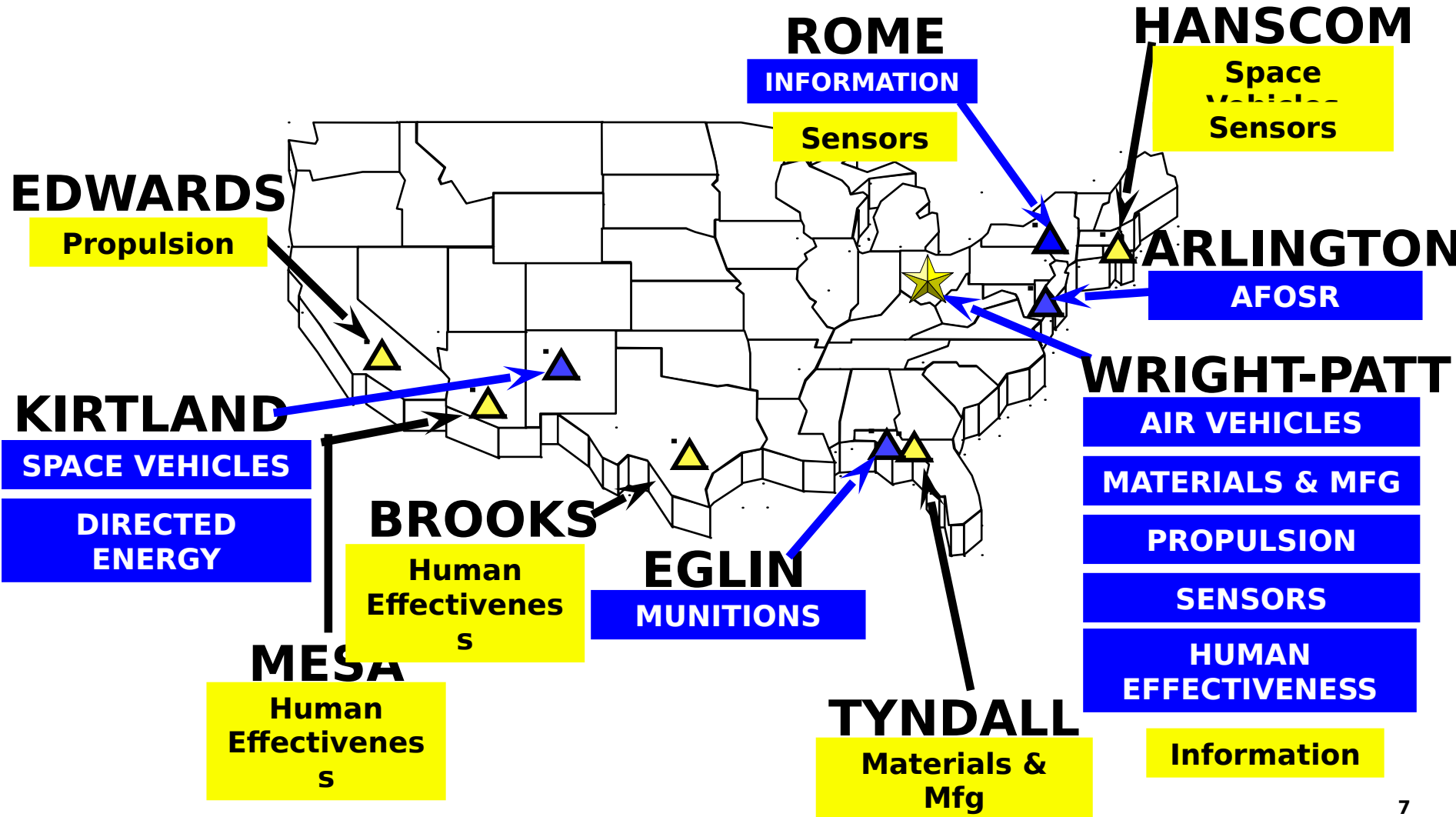


Air Force Research Laboratory





AFRL Research Sites





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Operating Tenets



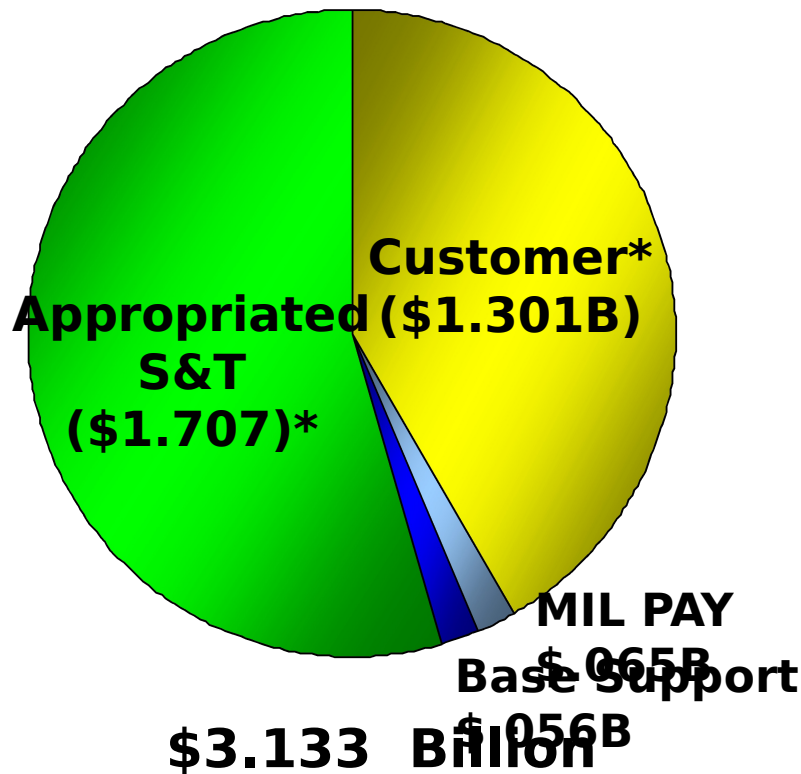
- **Outsource majority of research/tech development to industry and academia**
- **Perform focused in-house research to maintain core expertise and be a smart outsourcer**
- **Balance near term transfer and far term research**
- **Collaborate/coordinate with others**
 - **DoD: Army, Navy, DARPA, DTRA, BMDO, NRO**
 - **Other federal agencies: NASA, DOE, others**
 - **Private sector**
 - **International**



AFRL Resources (FY03)

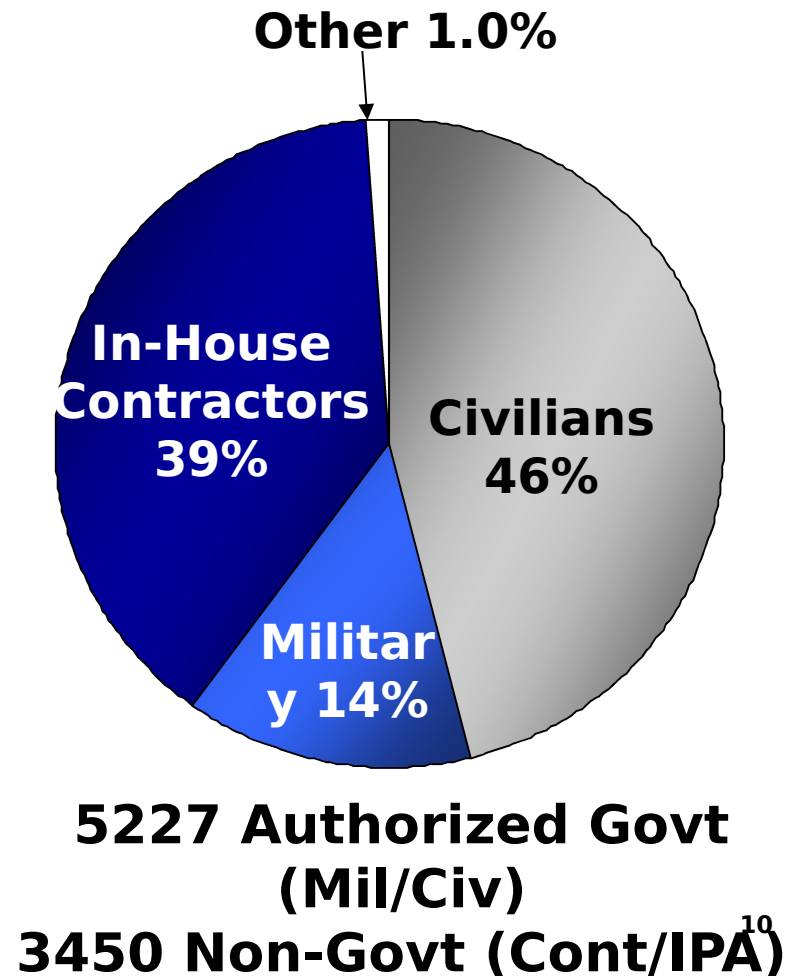


Revenue



* Estimate Only

Manpower



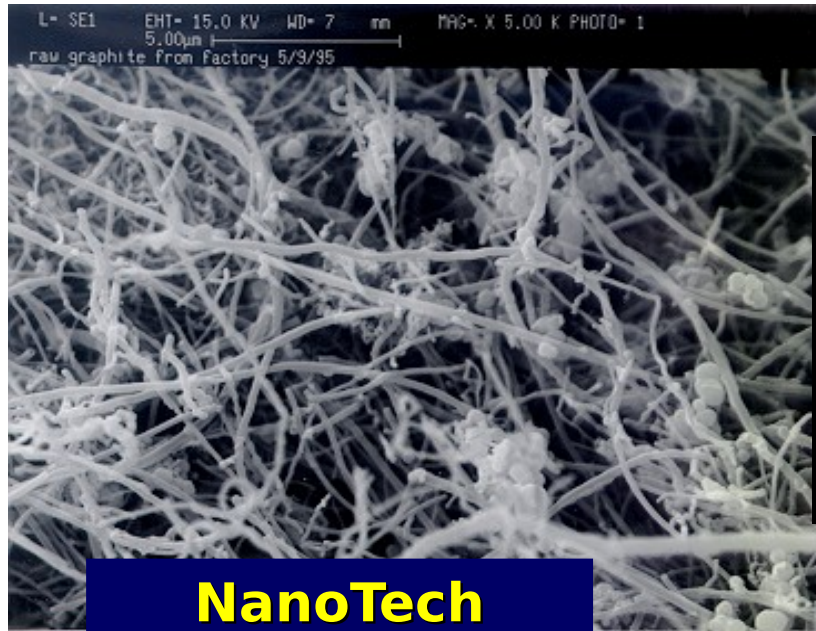


New Initiatives & Tech Revolution

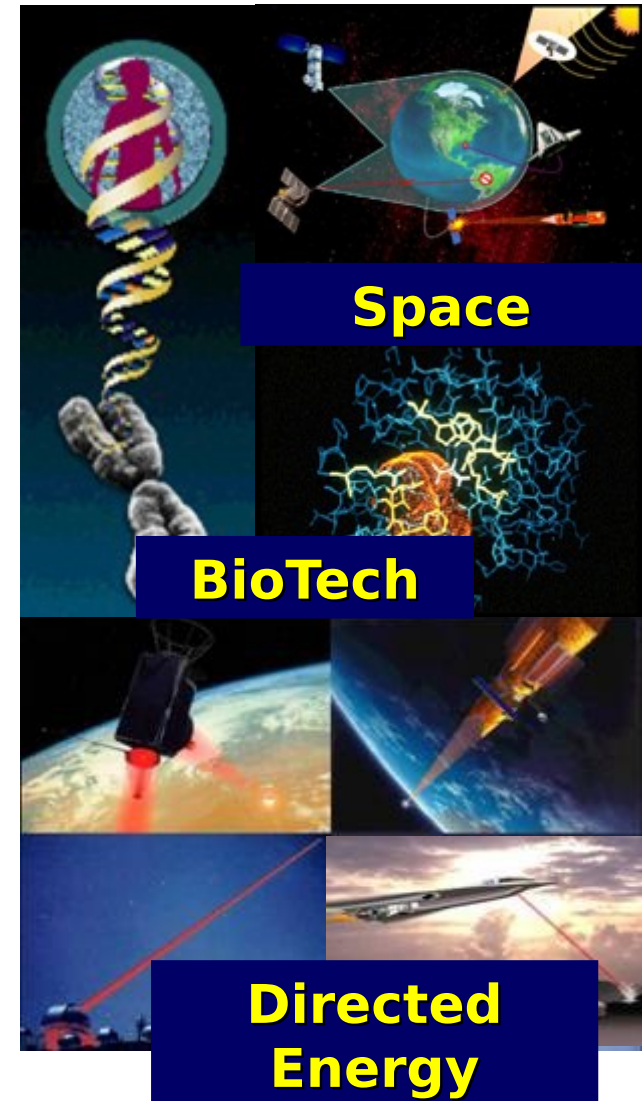
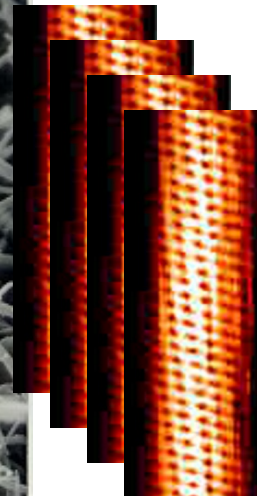


- Information Technology
- Biotechnology
- Nanotechnology
- Space Technology
- Directed Energy

Enable
Next-Generation
Warfighting
Capabilities



NanoTech



Space

BioTech

**Directed
Energy**



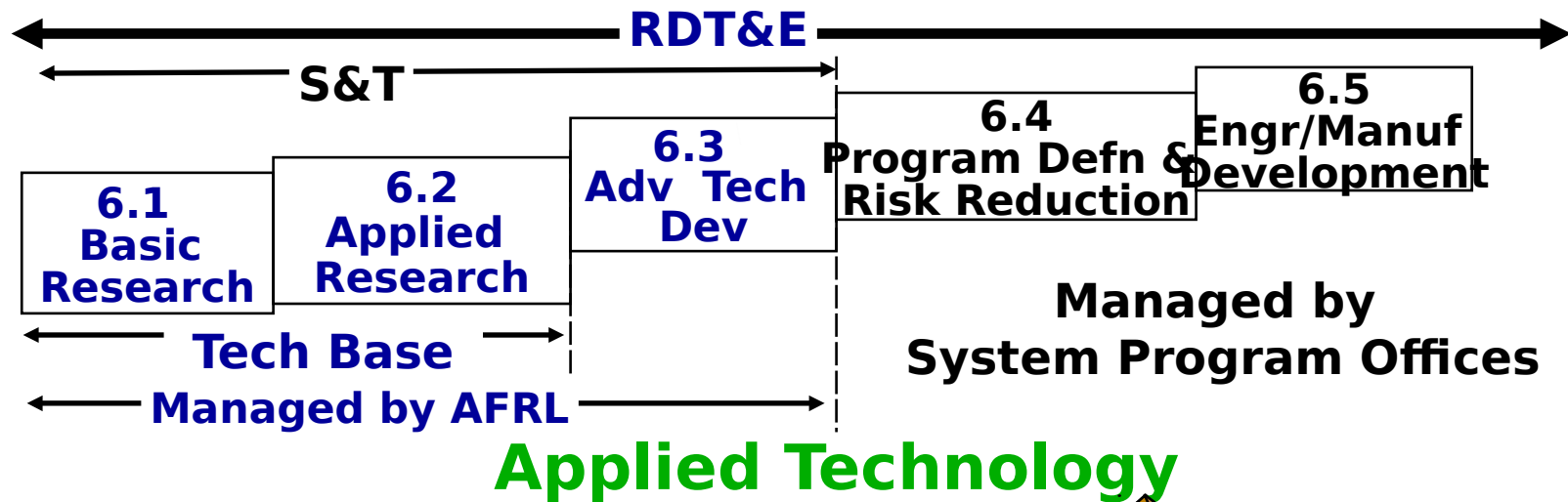
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What is the Technology Transition Gap?



Means for Tech Transition

Advanced Technology Demo (ATD)

Advanced Concept Tech Demo (ACTD)

Technology Planning IPT

Battle Lab Experiments

Technical Events (JEFX)

SPD Initiative

Industry Initiative

Senior Leader Initiative

Valley of Death

Emphasis is Necessary on Technology Transition

- Sustained Senior Leader Emphasis
- Continuous Communication
- Integrated Process
- Budget For Production

Incorporation



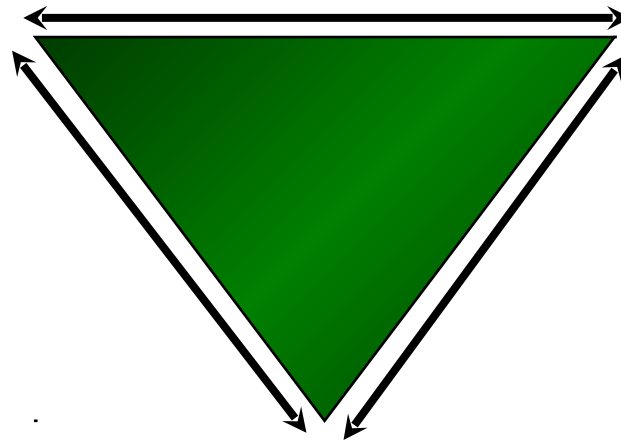
The ATC Triangle

• Identify ★★
Lab Candidates

• POM for
Technology

Programs

• Develop
Transitiona
ble
Technologie
s



• User ★★
• Define ★★
Requirements

• POM
Transition
Funds

Product Center ★★★

- Interpret Requirements
- Build Transition Program
- Integrate Into Systems



ATD Categories

- **ATD Categories**
 - **Category 1:** MAJCOM/Agency supports and has programmed required funding for transition (6.4 and beyond) within the FYDP
 - **Category 2A:** MAJCOM/Agency supports and is committed to identify transition funding in the next programming cycle
 - **Category 2B:** MAJCOM/Agency supports but is not currently able to POM for transition
 - **Category 3:** Warfighter Does Not Support



Applied Technology Councils



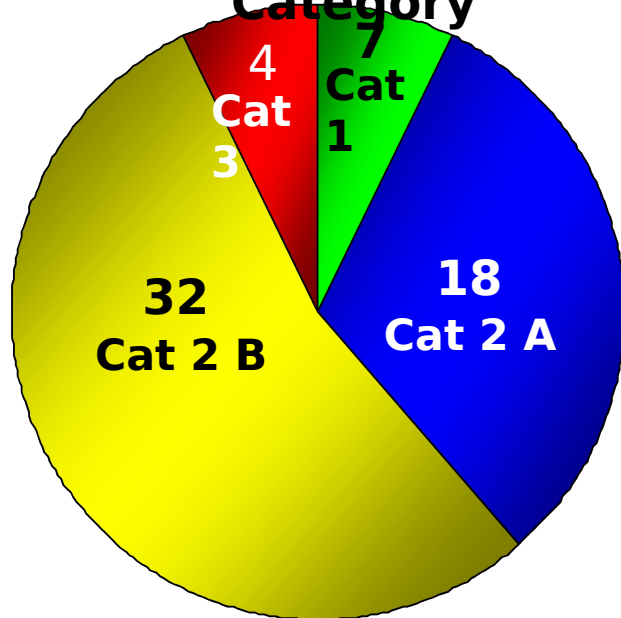
MAJCOM	LEAD CENTER	OTHER CENTERS	AFRL SECTORS
ACC	ASC	ESC, AAC	XPA
AFC2ISR	ESC	ASC, SMC	XPC
AFSOC	ASC	ESC, AAC	XPW
AMC	ASC	ESC	XPA
AFMC	ASC	All Centers	XPA
AFSPC	SMC	ESC, ASC	XPS



ATC Results Round 1 vs. Current

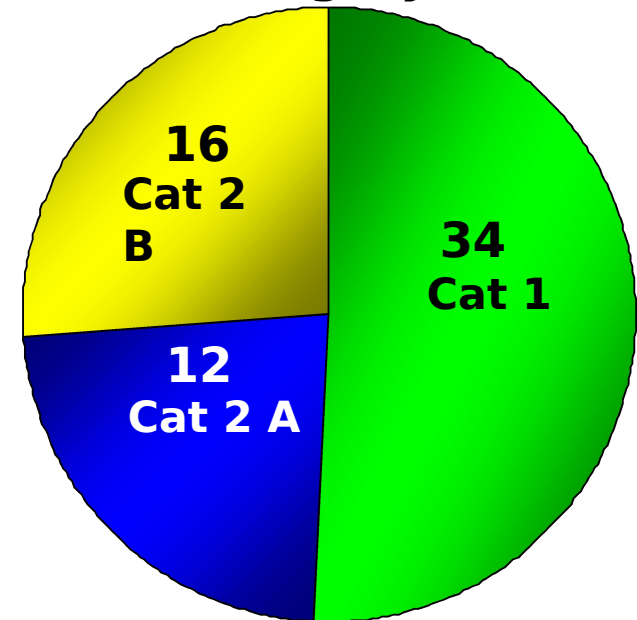


Round 1 (Spring '00)
Commissioned ATDs by Category



- 57 ATDs Commissioned
- 12% (7 / 57) w/ MAJCOM Transition Funds
- AFRL Funding Comm **• 18% of 6.3 Funds**
 - \$87.1M FY00
 - \$530.5M FY00-07

Current
Commissioned ATDs by Category



- 62 ATDs Commissioned
- 51% (33 / 65 w/ MAJCOM Transition Funds
- AFRL Funding Comm **• 50 % of 6.3 Funds**
 - \$225.8M FY03
 - \$628.5M FY03-09

As of Jan 03



ACC Advanced Technology Demonstrations



Rank	ACC ATD Status & Proposed ATD/ATD Candidates Round 5	Current Status	Rnd 4: Rationale/ Comments	Round 4 Categories	Proposed Fall 02 Status	Fall 02:Rationale/Comments
1	Integrated PNVG	G ●		2A	G ●	
2	Advanced Laser Eye Protection (ALEP)	G ●		1	G ●	
3	Adv Tactical Targeting Technology (AT3)	G ●		1	G ●	
4	UCAV	Y ●	Schedule/Funding	2A	G ●	
5	Surface Target Ordnance Pkg (STOP)	G ●		2B	G ●	Testing on-going
6	Precision Direct Attack Munition	G ●		1	G ●	
7	Strike Helmet 21	Y ●	Technical Risk	2A	G ●	
8	Powered LOCAAS	G ●		1	G ●	
9	AGRI for Combat ID	G ●		1	G ●	
10	J OANNA	Y ●	Schedule	1	N/A	DECOMISSION
11	Adv Laser Device & Beam Control for ABL	G ●		1	G ●	
12	Night Vision Device Training	G ●		1	G ●	
13	20/20 Immersive Display System for DMT	G ●		1	G ●	
14	Next Gen Threat Sim System for DMT	G ●		1	G ●	
15	F-35 F135	G ●		1	G ●	
16	J P8+100LT Upgrade	G ●		2A	G ●	RQ-4 TEST REQ
17	Dist Training Network Guard for DMT	G ●		1	G ●	
18	Tactical Sensor Harding	N/A			G ●	CANDIDATE
19	Laser Sensor Hardening Implementation	G ●		AFSOC	G ●	
20	Multiple Event Hard Target Fuze	G ●		2A	Y ●	ADW ISSUES
21	F-35 F136	G ●		1	G ●	
22	Advanced Threat Alert (ATA)	N/A			G ●	CANDIDATE
23	AE3007H	N/A			G ●	CANDIDATE
24	High Durability Hot Exhaust Structures	G ●		2B	G ●	
25	Deployed AEF LO Repair	G ●		2B	G ●	B2 SPO PLUS UP
26	Fuze Air-to-Surface Technology (FAST)	G ●		2B	G ●	
27	Next Generation Transparency	Y ●	Technical Risk	2B	G ●	T-38 FUNDS
28	LO Air Data	G ●		2B	G ●	

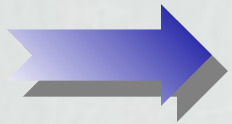
- G** ● ACC agrees: Within cost and on schedule
- Y** ● ACC has minor shortfall in cost/schedule/scope/technical risk
- R** ● ACC has major shortfall in cost/schedule/scope/technical risk



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AF Office of Scientific Research



- **Physics & Electronics**
- **Mathematics & Space Sciences**
- **Aerospace & Materials Sciences**
- **Chemistry & Life Sciences**



Materials & Manufacturing Directorate



- Structures & Propulsion
- Sensors & Survivability
- Sustainment & Deployment





Human Effectiveness Directorate



- **Warfighter Training**
- **Crew System Interface**
- **Bioeffects & Protection**
- **Deployment & Sustainment**





Directed Energy Directorate



- Lasers
- High Power Microwaves
- Advanced Optics & Imaging





Sensors Directorate



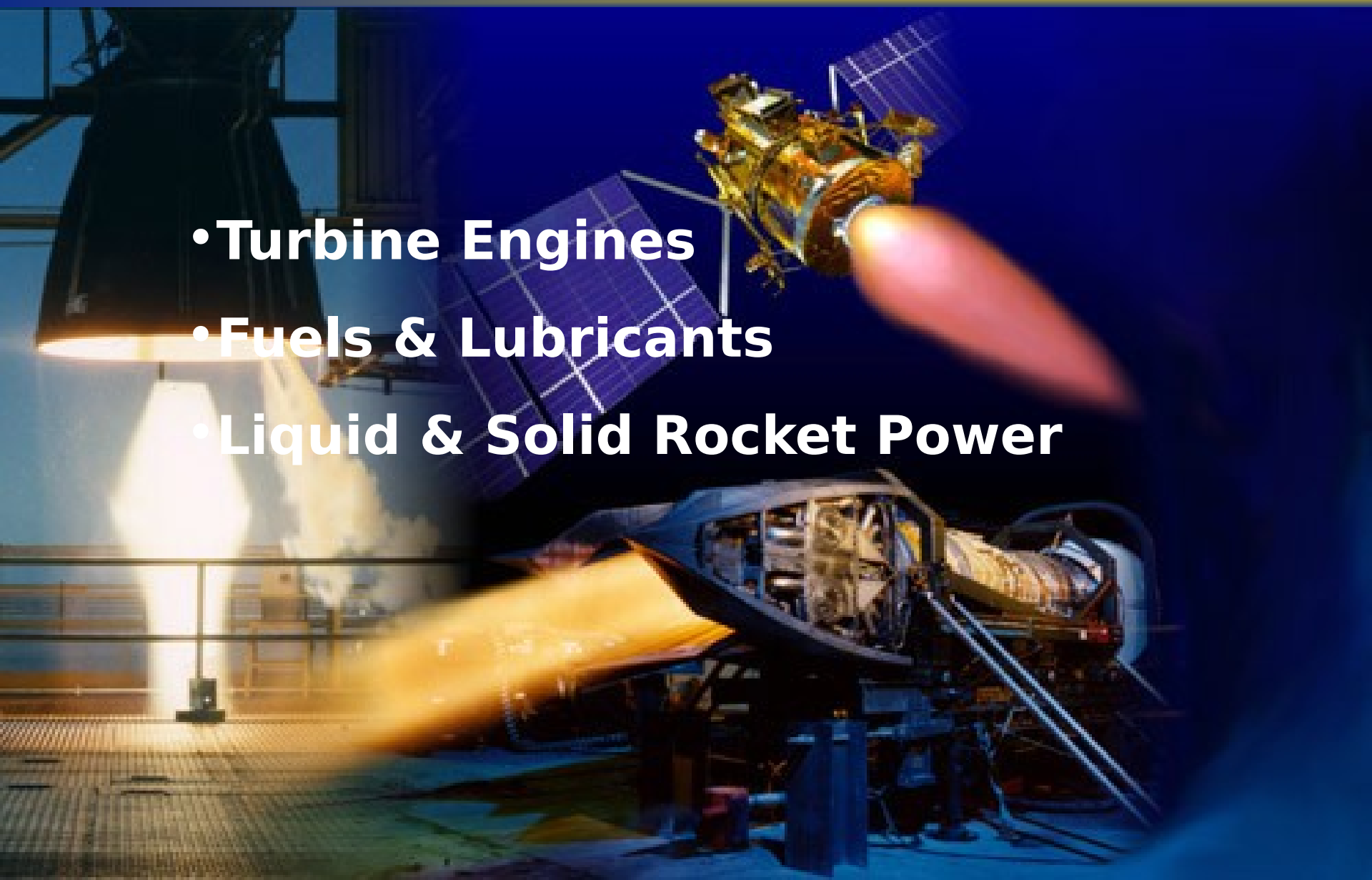
- **Radio Frequency Sensors & Countermeasures**
- **Electro-Optical Sensors & Countermeasures**
- **Automatic Target Recognition & Sensor Fusion**



Propulsion Directorate



- **Turbine Engines**
- **Fuels & Lubricants**
- **Liquid & Solid Rocket Power**





Information Directorate



- **Dynamic Planning & Execution**
- **Global Awareness**
- **Global Information Enterprise**





Munitions Directorate



- Precision Munitions
- Counterproliferation
- Alternative Effects Weaponry





Air Vehicles Directorate

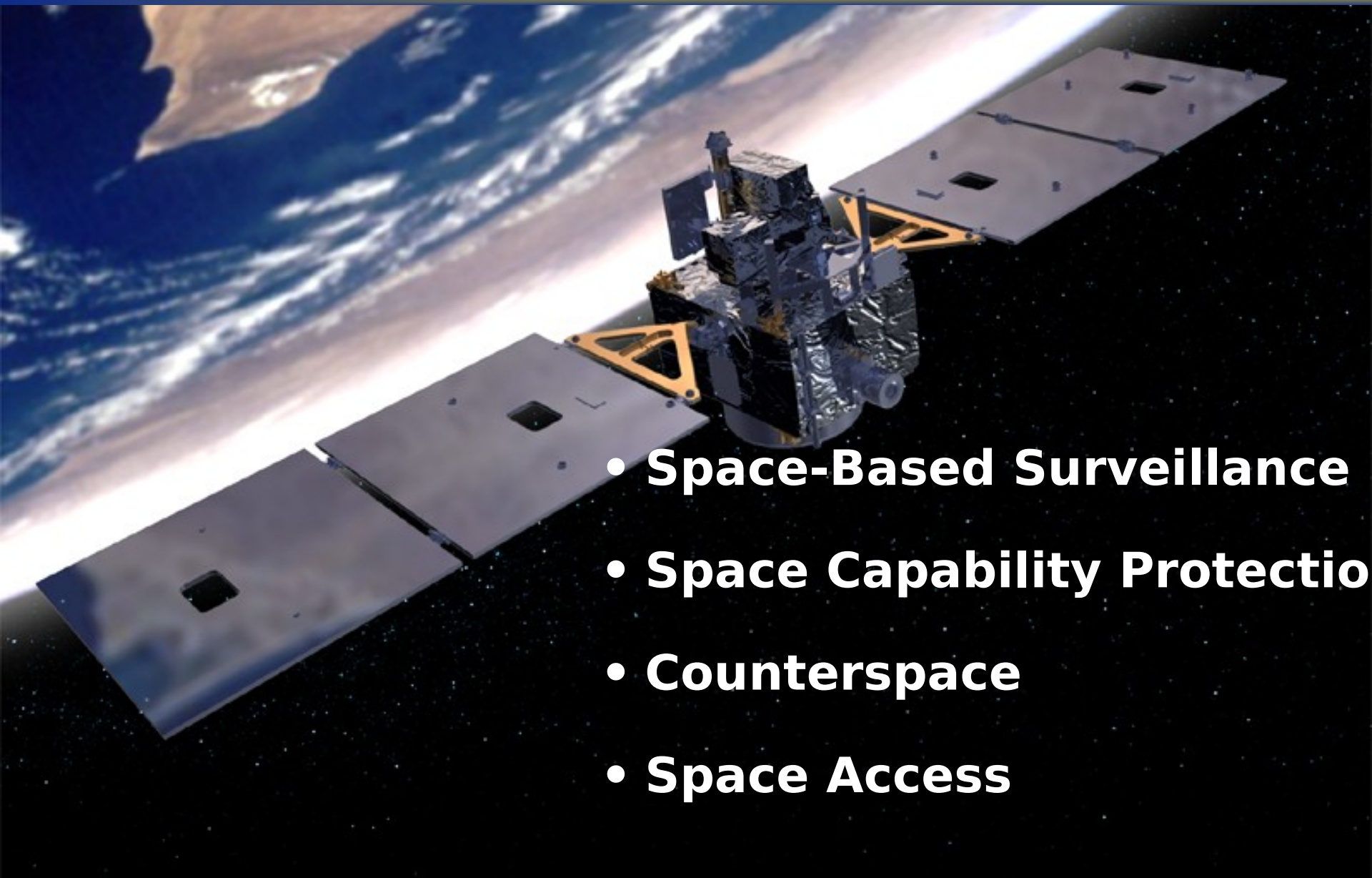


- Sustaining Today's Fleet
- Unmanned Air Vehicles
- Space Access & Future Strike Technologies





Space Vehicles Directorate



- **Space-Based Surveillance**
- **Space Capability Protection**
- **Counterspace**
- **Space Access**



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- Technology Critical to 21st Century Forces
 - Collaboration/Partnerships